HUMAN EVOLUTION

An Introduction for the Behavioural Sciences

Graham Richards

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Preface to 2019 re-issue

This book's unexpected re-issue provides an opportunity for some brief hindsight reflections. Over 30 years is a long time in any scientific field and human evolution studies are no exception. Most readers will be aware of the discoveries of the tiny *homo floresiensis* on the Javanese island of Flores (2003) and the Denisovans (2010) in the Altai Mountains of Siberia on which the web is awash with information. Another front on which huge advances have been made is in DNA (particularly mtDNA) analysis. In the 1980s the question of possible interbreeding between Neanderthals and early modern humans was hotly debated, but is now firmly established, as is the interbreeding of both with Denisovans in east Asia. The proportion of Neanderthal DNA in contemporary west Europeans is around 4% (estimates vary from 1% –7% as far as I can gather). A similar proportion, or higher, is typically found in east Asians along with up to 6% from Denisovans. Taken together new fossil finds and genetic data are creating a plethora of hypotheses about the actual number of hominin lineages over the last million years, their inter-connections, and the timings of their dispersals out of and indeed within Africa. The bearings of these post-1990 developments on the evolution of human behaviour are unclear. An improved grasp of Neanderthal life-style suggests both a closer resemblance to that of contemporary *Homo sapiens* than once assumed, and that their posture was even more upright. The new data from archaeology and palaeontology has rendered a simple plot-line harder than it once seemed regarding the origins of language, art, cooking, caring for others and the other hallmarks of 'culture', even if it clearly implies propensities for wanderlust and sexual xenophilia in all our ancestral branches!

During the late 1980s the picture was more promising. The original and insightful work of social anthropologist Tim Ingold for example, which came to my attention too late for inclusion here, but really must be checked out by new students (see especially his contributions in Kathleen R. Gibson & Tim Ingold (eds), 1993), Peter Wheeler's model of the linkage between hairlessness and bipedalism facilitating a noon-day scavenging niche also broke new ground (see P. Wheeler, 1991 for an accessible summary), along with Robert J. Blumenschine's research on scavenging and hunting (these also appeared too late for inclusion in the present work, but see Graham Richards (1989a)).

Also, in 1988, Richard W. Byrne & Andrew Whiten (eds) *Machiavellian Intelligence: Social Expertise and the Evolution of Intellect in Monkeys, Apes, and Humans* was a major research-based advance of the kind I had been hoping for, while Thomas Wynn published a book-length account of his Piagetian analyses of stone tools in 1989. A little later Duane Quiatt and Vernon Reynolds (1995) also provided an important overview from a primatological perspective. My own position was more fully stated in the 1989a paper and *On Psychological Language and the Physiomorphic Basis of Human Behaviour* (1989b). After 1990 academic circumstances returned me to a previous focus on the history of Psychology (which, in a fashion too complicated to explain here, actually led to the human evolution detour in the first place). Despite the flurry of immediate progress (only a few examples of which I just have mentioned) the multi-disciplinary 'Palaeopsychology' project which I aspired to promote never materialised. Instead we got *Evolutionary Psychology*. If not without some value this sub-discipline has failed, in my view, on two fronts. Firstly, by relying almost entirely on the reductionist conceptual repertoire of Sociobiology (as a spin off from which it began) and secondly because its central interest has been in conjuring up evolutionary explanations of currently human (especially American) behaviour of cultural concern, in terms of these concepts (such as 'inclusive fitness'). What it has not, to my awareness, done is actually collaborate with the various 'palaeodisciplines' in trying to understand human behavioural evolution itself. For a couple of later jabs at this I refer the reader to Graham Richards, 2001, 2003, but of course, see also H. & S. Rose (2000) (eds) *Alas Poor Darwin*.

Having got that off my chest, I will sum up by saying that while the field of human evolution has moved on considerably since first publication, I believe my discussions of behavioural topics continue to be relevant, serving at least as useful starting points for students, and that my critiques of aspects of Sociobiology in Chapter 5 still stand. My overall orientation, as outlined in the original Preface, also, I like to imagine, has some elements of originality. No comparable single work providing an updated overview of the range of topics I covered has, as far as I know, appeared since. Is it possible the whole subject stalled sometime in the mid-1990s? Or was it just my involvement in it? Certainly, my core observation that human uniqueness lies not in some specific thing we do, but in the fact that we can do everything, still has not, it seems, properly sunk in. (Oh, and Figure 5.2 I is useless without further explanation – which I cannot now provide, sorry about that!)

References

Blumenschine, Robert J. (1986a) *Early hominid scavenging opportunities: Implications of carcass availability in the Serengeti and Ngorongoro ecosystems*, British Archaeological Reports International Series, 283.

Blumenschine, Robert J. (1986b) 'Carcass consumption sequences and the archaeological distinction of scavenging and hunting', *Journal of Human Evolution*, Vol.15, pp.639–659.

Byrne, Richards W. and Whiten, Andrew (1988) *Machiavellian Intelligence: Social Expertise and the Evolution of Intellect in Monkeys, Apes, and Humans*, Oxford: Oxford University Press, Clarendon Press.

Gibson, Kathleen R. and Ingold, Tim (eds) (1993), *Tools, Language and Cognition in Human Evolution*, Cambridge: Cambridge University Press.

Ingold, Tim (1986a) *The Appropriation of Nature: Essays on Huma Ecology and Social Relations,* Manchester: Manchester University Press.

Ingold, Tim (1986b) *Evolution and Social Life*, Cambridge: Cambridge University Press.

Quiatt, Duane and Reynolds, Vernon (1995) *Primate Behaviour: Information, Social Knowledge and the Evolution of Culture*, Cambridge: Cambridge University Press.

Richards, Graham (1989a) 'Human Behavioural Evolution: A Physiomorphic Model', *Current Anthropology*, Vol.30 (2), pp.244–255.

Richards, Graham (1989b) *On Psychological Language and the Physiomorphic Basis of Human Behaviour*, London: Routledge.

Richards, Graham (2001) 'Genetic possession', *Psychology, Evolution and Gender*, 3 (2), pp.197–203.

Richards, Graham (2003) 'Palæopsychology: the road not taken', *Sexualities, Evolution and Gender*, 5(1), pp.23–30.

Rose, H. and Rose, S. (eds.) (2000) *Alas, Poor Darwin. Arguments against Evolutionary Psychology*, London: Jonathan Cape.

Wheeler, P. (1991) 'Body hair reduction and tract orientation in man: Hydrodynamics or thermoregulatory aerodynamics?' in Roede, Machteld, Wind, Jan, Patrick, John and Reynolds, Vernon (ed.). *The Aquatic Ape: Fact or Fiction? The First Scientific Evaluation of a Controversial Theory of Human Evolution*, London: Souvenir Press.

Wynn, Thomas (1989) *The Evolution of Spatial Competence*, Urbana & Chicago: University of Illinois Press, Illinois Studies in Anthropology, No.17.

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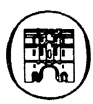

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This book is for my daughters
Carol and Rebecca
and my mother Dorothy

There was a child went forth every day,
And the first object he looked upon, that object he became,
And that object became part of him for the day, or a certain part of the day,
Or for many years or stretching cycles of years.
. . . . . .
The strata of coloured clouds, the long bar of maroon tint, away solitary by itself – the spread of purity it lies motionless in,
The horizon's edge, the flying sea-crow, the fragrance of salt marsh and shore mud;
These became part of that child who went forth every day, and who now goes, and will always go forth every day.

Walt Whitman

And the poor old lousy old earth, my earth and my father's and my mother's and my father's father's and my mother's mother's and my father's mother's and my mother's father's and my father's mother's father's and my mother's father's mother's and my father's mother's mother's and my mother's father's father's and my father's father's mother's and my mother's mother's father's and my father's father's father's and my mother's mother's mother's and other people's fathers' and mothers' . . . . .

Samuel Beckett, *Watt*

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Preface

My interest in human evolution, though longstanding, began to gather momentum around 1980 for a combination of reasons. Firstly as an inveterate addict of *Current Contents* I found myself increasingly intrigued by the titles of papers appearing in such journals as *Current Anthropology*, *American Journal of Anthropology* and the *Journal of Human Evolution* which were unavailable at the main college library to which I had access. I thus began soliciting reprints of these from their authors, and would at this early point like to extend a general, heartfelt, acknowledgment to all those farflung palaeontologists, palaeoanthropologists and archaeologists who have generously supplied me with their papers over the last few years, and who must often have wondered why a psychologist at North East London Polytechnic wanted to know about occipital bunning, Miocene molars, microwear and the like. But idle curiosity was clearly not the only factor at work. My teaching has primarily been concerned with the historical development of Psychology and psychological theories, broadening more recently into history of science and Philosophical Psychology. The historical quest for the roots both of psychological ideas and scientific behaviour itself pushed my focus of attention ever further back. What now became the central, unifying, theme of my inquiries was the nature of human uniqueness itself, and the origins of our peculiarly human combination of genius and lunacy. I had long been nurturing certain ideas regarding this (briefly summarised below in Chapter 5), but a proper evaluation and formulation of these necessarily meant acquiring a clearer grasp of what was actually known about human evolution, especially its behavioural aspects.

It is perhaps worth stressing that this burgeoning concern with human evolution owed nothing to any sociobiological or 'nativist' predelictions at the theoretical level, but rather stemmed from an intensifying conviction that an evolutionary perspective was necessary for any balanced appraisal of the character of our species – with which, as a psychologist, I was supposed to be ultimately concerned. I soon became aware that an

inchoate body of psychological work was developing in the human evolution field, notably that of Parker and Gibson, Wynn, some of Holloway's papers, Tanner's *On Becoming Human* and a variety of work by palaeoarchaeologists such as Glynn Isaac on the behavioural implications of early hominid sites.

In 1983 I was sufficiently enthused to read a paper at the British Psychological Society Summer Conference entitled 'On the Possibility of a Palaeopsychology'. The present work represents what an eighteenth-century philosopher might have called 'a prolegomena to any future Palaeopsychology'. That is to say, it attempts a preliminary survey of the current state of our understanding of human evolution in general, but with emphasis on its behavioural and psychological aspects. This book does *not* therefore attempt to present the reader with a coherent story of human evolution, but introduces her, or him, to the multiplicity of views on the issue currently in the arena (though omitting for the most part flying saucers, Fundamentalism and the Lost Continent of Mu, etc.). Such a survey seems to me to be the best service I can perform at this point to draw human evolution into the orbit of Psychology, and bring the possibility of a 'Palaeopsychology' nearer its realisation.

Having said all that, my own view of the situation necessarily emerges, pessimistic as it is, though without I hope unduly colouring the exposition. Books, even textbooks (*especially* textbooks?) are inescapably of their time, and the present time is not optimistic. Having finished it, I am aware that the label 'textbook' sits on the book rather uneasily in any case. This is genuinely due, in part at least, to the nature of the material and the task. There is a sort of ritual textbook format for those books on human evolution aimed at physical anthropology students or palaeontologists, but no such format for ones aimed at behavioural sciences. Sociobiology, incidentally, has surprisingly little coverage of the actual data regarding human evolution, about which it has such firm opinions. A range of material has had to be gathered which has not been treated together at an introductory level before (much of it very recent), and this has often entailed taking a more evaluative approach than is usual in 'textbooks'.

Except, as in much of Chapter 2, where it would be anachronistic to do so, I have tried to de-genderise my style as far as possible. Human evolution has proved to be one of those areas where the feminist perspective has had considerable positive impact, and the avoidance of the inclusive masculine has actually brought to light numerous implicit assumptions about ancestral life-styles of which earlier writers were hardly aware.

The number of people who have helped in furthering this project in various ways is considerable, in addition to the kind band of off-print suppliers referred to earlier. I would like to first thank Mary Midgley,

not only for her support in this particular endeavour, but for her perennial encouragement and the example of intellectual rigour and integrity which she has set for all her former students. Peter Bowler, Dean Falk, Ralph Holloway, Elaine Morgan, Elizabeth Parker, Philip Tobias, Alan Tuohy, Stephen Walker and Thomas Wynn have all helped with comments, ideas and material. My colleagues Keith Philips and Claire Fullerton helped me sharpen up the section on Altruism. I am particularly indebted to Dr Chris Stringer at the British Museum (Natural History) for his counsel at various times, his happy knack of directing my attention to just the right texts at the right moment and reducing the howler-rate in parts of Chapters 3 and 6. Dr Peter Andrews of the same institution provided a valuable clarification of the nature of some of the early fossil evidence at a crucial point.

The staff at North East London Polytechnic's library have been invaluable over the years, in increasingly difficult circumstances. The libraries of the British Museum (Natural History), the Institute of Archaeology and the British Library have also proved their worth. Stuart Collins and Sabrina Izzard have played a major role in supplying my second-hand book needs. Carol Richards deserves a mention for helping with the bibliography.

Any lack of the customary seraglio of typists, secretaries, and research assistants has been, throughout, more than offset by the fact that I *do* have Maura, who, whilst rightly performing none of these functions, has ruthlessly averted atrophy of the ego, wilting of the will and divergent dissipation of drive in the way only Irish novelists can for academic Brits.

For want of a scapegoat all errors are probably my fault.

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Academic Press (Figures 3.10 & 4.5); British Museum (Natural History) (Figure 3.8, Appendix B and Plates 2–8); Cambridge University Press (Table 4.4.); Robert S. Corruccini of Southern Illinois University (Figures 3.4–3.7); Harvard University Press (Figures 5.1 & 5.2); Malcolm Kirk (Plate 11); Alexander Marshack of the Peabody Museum, Harvard University (Plate 13); National Geographic Magazine (Plate 11); Mark Newcomer of the Institute of Archaeology, London (Plate 10); Sue Parker of Sonoma State University, California (Table 4.4); H. C. Plotkin of University College, London (Figure 3.10); The Prehistoric Society (Figure 3.9 & Plate 9); Pat Shipman of The Johns Hopkins University, Maryland (Plate 12); and Thomas Wynn of the University of Colorado (Figures 4.4 & 4.5).

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CHAPTER 1

The nature of the problem

We want to be free. We need an identity. Current controversies over the nature (if any) of our species derive much of their energy from the tension between these two psychological imperatives. The former directs us to emphasise the present as a continuing choice-point, to which we bring nothing but our consciousness of what we have learned from our personal experience of the world. Liberation involves raising to consciousness as much as possible of our past, and learning as much as possible of the factors affecting us in the present, in a process somewhat cumbersomely but accurately labelled by the German philosopher K. O. Apel (1977) 'critically emancipatory self-reflection'. The need for identity compels us to label ourselves, to classify and constrain ourselves as essentially belonging to groups which transcend our personal selves, groups of which we are representatives; our sex, nationality, class, ethnicity, occupation, religion, clan, or even our generation. Being free, however, forces us to strive to transcend these labels and accept only a logically prior identity as 'human'. While the quest for identity obviously involves a quest for origins, in a sense we can also only be free if we have established for ourselves our 'true identity'. (It is to the enduring credit of the 1960s anti-psychiatrists such as Laing and Cooper that they drew attention to the crucial importance of honesty in this respect for the future mental well-being of the child.) Both imperatives thus send us in search of our origin, and it is only in finding it that the apparent contradiction between them can be resolved and explained.

Jungian writers such as Neumann (1954) and von Franz (1972) were surely correct in seeing that the question of origins fused both psychological and cosmological levels. We cannot be free in the cosmos until we know where we belong in it, and it seems clear that the answer to this must lie in finding how the cosmos itself created us, what kind of parentage it gave us. (The perennial resilience of astrology testifies to precisely this.) As Neumann argues, the origins of consciousness and the universe are of necessity indistinguishable in creation myths;

> Mythological accounts of the beginning must invariably begin with the outside world, for world and psyche are still one. There is as yet no reflecting, self-conscious ego that could refer anything to itself, that is, reflect. Not only is the psyche open to the world, it is still identical with and undifferentiated from the world; it knows itself as world and in the world and experiences its own becoming as a world-becoming, its own images as the starry heavens, and its own contents as the world-creating gods. (1954, p. 6)

While this sort of language and approach is uncongenial to most contemporary psychologists, it provides the only perspective yet offered from which constructively to grapple with such material as the following;

> (Marduk has just slain the primordial hag Tiamat.) He turned back to where Tiamat lay bound, he straddled the legs and smashed her skull (for the mace was merciless), he severed the arteries and the blood streamed down the north wind to the unknown ends of the world.
>
> When the gods saw this they laughed out loud, and they sent him presents. They sent him their thankful tributes.
>
> The lord rested; he gazed at the huge body, pondering how to use it, what to create from the dead carcass. He split it apart like a cockle-shell; with the upper half he constructed the arc of the sky, he pulled down the bar and set a watch on the waters, so they should never escape.
>
> He crossed the sky to survey the infinite distance; he stationed himself . . . over the old abyss which he now surveyed, measuring out and marking in.
>
> He stretched the immensity of the firmament, he made Esharra, the Great Palace, to be its earthly image, and Anu and Enlil and Ea had each their right stations. (from 'The Babylonian Creation' in Sandars (1971), pp. 91–2)

This marks the beginning of a section in which Marduk constructs the present universe from the hag's corpse (if we bear in mind that it was the Babylonians who ultimately set the scientific programme in motion, there is something peculiarly disturbing in this, a distant adumbration of *Death in Nature* (Merchant, 1983)). Freudian matricidal frenzy, birth trauma and cosmological theorising are inextricably fused.

Thus the question of origins has exerted an almost universal and perennial fascination, and been an ever-present cultural pre-occupation. But the functions of origin myths are not restricted to the psychological. They serve, sociologically, to legitimate the *status quo*, to justify – or at any rate explain – the current ordering of society, and the right to rulership of its rulers. This is so whether the rulers are seen as genealogically descended

from the founding gods or whether their eminence is itself proof of their evolutionary fitness; whether social institutions are those ordained by the Creator (like the church) or the ancestral founders of the current order (like the writers of the US constitution). Even where accounts of origins are not deliberately tailored to bolstering the present establishment, they nevertheless account for the present in some way, locating it in the cosmological scheme of things, e.g. Hinduism's account of us as living in the Kali Yuga, the last and worst in the current four-yuga cycle (Zimmer, 1972) or contemporary popular science images of us as possibly being at some phase in planetary evolution where matter becomes self-conscious as a prelude to joining the cosmic community.

John R. Durant (1981), in addressing this issue of the mythological character of theories of human evolution, points out how the 'beast in man' myth, in particular, has been carried over from Christianity into, first, Darwin's own model of human descent, and then into the twentieth century in Freud, Dart, Ardrey and Lorenz. In each case the moral is drawn that we have inherited a bloodthirsty savage dark side to our character, legacy of our species' distant ancestral past. More recently alternative interpretations more congenial to the liberal temperament have provided myths to oppose this, in which emphasis is shifted to co-operation or the role of women. The reader will encounter images of both kinds, and more, recurring throughout the following pages. By and large I endorse Durant's perception of the problem, his own remedy for which is given in the following passage:

> It seems to me that when people of many different political persuasions are all engaged in mythologising the theory of human evolution, the only way out of the resulting confusion is a determination to *stop playing this particular game*. Scientific studies of human origins are best undertaken without the subjective pressures and distortions which are introduced by the desire to see one's personal view of life confirmed in the testimony of the rocks; and political issues are best discussed without the pressing need to prove one's point of view by reference to the social life of baboons, or whatever. As things stand at the present time, we are in urgent need of the de-mythologisation of science. (1981, p. 437. Italics in original)

But is this not to abandon the field prematurely? We are up to the hilt in myth-making whether we wish it or not. As I will be arguing in Chapter 5, we cannot leave ideology out of the picture as one might be able to do in investigating electronics. Even at the motivational level, the drive behind those researching human evolution has not infrequently been broadly ideological in character. To anticipate some of the later discussion, one's entire perspective on human evolution is conditioned by whether or not one sees the present condition of the species as pathological. The

researcher's ideological or political appraisal of the present defines what it is that the study of human evolution is, in the final analysis, explaining. Try to do without this and you will find it hard to draw any interesting conclusions at all. One cannot escape myth-making by fiat. And just for once I feel that the old excuse 'if we don't do it someone else will' has a certain validity.

Psychologists approaching human evolution are thus placed in a dilemma, for their interest in it is of two different kinds. Firstly we are interested, in the straight scientific sense, in the evolution of the species to which the majority of our studies are directed. The use we make of this knowledge will vary according to theoretical taste, but few would feel it to be *entirely* irrelevant to their task of understanding modern humans. We might also feel that Psychology could assist those disciplines such as Palaeoanthropology, directly concerned with studying human evolution. In short there is a conventional professional interest in a subject closely related to, or even overlapping with, our own. But secondly we cannot relinquish the reflexive role; an awareness of the psychological aspects, both individual and social, of origin myths must necessarily alert us in a special way to the effects of these on accounts of human evolution. We become aware of how contemporary issues of great psychological profundity, such as the nature of the relationship between the sexes, can be played out in the arena of theorising about the evolution of human social life and sexual behaviour. We become aware too of how the scientific study of human evolution is counterposed in contemporary culture to other accounts of origins of more archaic kinds, and how these derive their power perhaps from addressing more directly the psychological needs mentioned earlier, be they fundamentalist Creationism or God-was-an-astronaut in character.

The fact of the matter is that our species is, or believes itself to be, in crisis. But where do the origins of this crisis lie? What is its real nature? In such a climate the pressure is on to construct myths of origin which can structure the present, a task for which received myths are inadequate, myths which can endow the seeming chaos, actual or impending, with meaning. But there is a parallel pressure genuinely to diagnose the nature of the crisis in a rational fashion, and this too involves the exploration of origins, at least as part of the story. It is the difference between Danniken and the Leakeys. As a psychologist, I am concerned with the latter, not the former – or, more correctly, I am only concerned with the former insofar as it bears upon the latter. But I am also mindful that the difference between the two is in practice marginal, more so than Durant appreciates, that both are hoping to achieve similar ends, of structuring and giving meaning. The inevitable embroilment of the study of human evolution with myth is recognised by some current authorities (e.g. Isaac, 1983), and one long eminent palaeontologist has concluded

> I now believe that what we say about human evolution, what we pick as essential human attributes, and how we trace their development often tell us as much about paleoanthropologists and the times in which they live than about the course of evolutionary events. We are emphatically not the new theologians, but I will close with an appropriately theological quote from the Talmud:
>
> We do not see things as they are
> We see things as we are.
>
> (Pilbeam, 1980, p. 283)

The book that follows is addressed primarily to those studying Psychology and other behavioural sciences. It is not a textbook on physical anthropology or on evolutionary theory as such, though these matters often concern us. It is an attempt at surveying, with a bias towards what would interest such a readership, the current state of knowledge regarding human evolution, and particularly its behavioural aspects. But I have also tried to sustain an awareness of the second, reflexive, angle of interest; the study of human evolution as a psychological phenomenon in its own right, an activity carrying much of the weight hitherto loaded on creation myths and accounts of ancestral origins. Perhaps ancestor-worship is after all our 'natural' religion, and the study of human evolution but its current persona.

Some sections of the book are more opinionated than is customary or seemly for textbooks, which are supposed to exhibit 'benevolent eclecticism' (Maddi, 1976), on the grounds that one need not go anywhere since all directions are equally interesting. Some of this opinionatedness stems from the psychological implausibility and conceptual incoherence of the views prevalent in a field (e.g. the discussion of 'Altruism' in Chapter 5). On other occasions it has seemed to me necessary to make my own views on a topic explicit, though I have not done so extensively or indulged in special pleading on their behalf.

The 'reflexive' perspective lies behind the fairly lengthy historical chapter, for the vicissitudes of the study of human evolution illustrate many facets of its *psychological* character as a branch of scientific inquiry.

Writers on human evolution are of course haunted by the ever-present possibility of a dramatic find turning up the week before publication and rendering their efforts obsolete at birth. While this text was being written there have been at least two major finds in East Africa, one an extremely early *Sivapithecus* fossil and the other a nearly complete skeleton of a *Homo erectus* youth whose mature height would have been around 6 foot. They do not seem immediately to affect the behavioural evolution picture, although the *H.erectus* stature is unexpectedly tall. A third find from north eastern Russia is a different matter. Artefacts here appear to date from two million years ago yet are far in advance of anything of that date

from Africa. Furthermore, as near-Arctic conditions prevailed in the region then, as now, it implies a level of cultural adaptation (clothes, fire, etc.) not usually believed to have been achieved until the last 100,000 years or so. A full evaluation of this data by international scholars is a long way off (as is the site!). It waits therefore in the wings of the present account, threatening to make a dramatic entry which would require complete revision of the behavioural evolution timetable. But its fate might, by contrast, be that of the Sunnyvale skeleton and *Hesperopithecus* instead (see below, pp. 57, 72).

In writing on human evolution for psychologists I am not to be understood as espousing a sociobiological or other biologically 'reductionist' view of human behaviour (my own tentative theoretical position is outlined in the course of Chapter 5). The intention is rather to provide broad pictures of both current scientific understanding of human evolution and the actual study of human evolution itself. Psychology and kindred disciplines cannot afford to ignore the evolutionary picture, while conversely the study of human evolution is in great need of input from Psychology. One aspect of this work then is to prepare students of Psychology for engagement in the required interdisciplinary two-way traffic. If it is considered to have made a contribution to the topic itself, that is a bonus.

CHAPTER 2

Linnaeus to the Leakeys

Introduction

A full history of the study of human evolution has yet to be published.[1] An outline of it is nevertheless essential for several reasons. Firstly, it will help the reader appreciate the difficulties which have had to be overcome in establishing the evolutionary perspective. Secondly, it enables us to see how sociohistorical factors and psychological needs of the sort just discussed can affect the scientific exploration of the topic. Thirdly, it reveals something of the central disciplines concerned raising matters of potential interest to anyone concerned with the psychological aspects of conceptual and theoretical change in the history of science. In any case, it would surely be paradoxical for the student of human evolution to ignore the evolution of its study!

This chapter falls into three principal sections: A The rise of the evolutionary perspective; B The great confusion; C Finding the 'missing links'. These represent the period up to 1872, the period 1873 to 1913, and the period 1914 to 1960 respectively. The period since 1960 is considered as the 'rearward portion of the present'. Like all such segmentations of the historical continuum this is largely artificial, but its rationale is as follows: the first period culminates in Darwin's two works on human evolution, *The Descent of Man* (1871) and *The Expression of the Emotions in Man and Animals* (1872); the second ends in a confusion due to the Piltdown hoax, an erroneous reconstruction of Neanderthal Man[2] and developments in genetics; the third ends with the discoveries at Olduvai Gorge of two fossil hominids, *Zinjanthropus* and *Homo habilis*, effectively recentering research in East Africa, where it as yet remains. These reference points are as convenient as any.

[1] Peter J. Bowler has such a work in progress, however, which we await with interest.

[2] See Preface for my policy regarding use of 'Man' and 'man', as opposed to non-genderised terms, in this book.

A The rise of the evolutionary perspective

This period may be interpreted as involving three separate conceptual problems: (1) the establishment of the evolutionary perspective itself, along with a scientifically viable theory of how evolution operated; (2) the relationship of 'Man' to this evolutionary process – whether and where humans were to be included in it; (3) the 'Antiquity of Man' (to use the title of Lyell's famous 1863 book), the time perspective in which human evolutionary events were envisaged as occurring. It is around these that this part of the story is structured, ending with a look at Darwin's two major works on the subject.

1 *The evolutionary perspective*

The evolutionary perspective was gaining ground slowly from as early as the mid-eighteenth century. Linnaeus (1707–1778), inventor of the modern system of zoological and botanical classification (Linnaeus, 1735) moved during his lifetime from believing in the eternal fixity of species to a belief in at least some degree of transformation (Tobias, 1980b). The notion of a 'Great Chain of Being' had been part of western cosmology since Aristotle (Lovejoy, 1936) and the German exponents of 'Naturphilosophie' such as Goethe (1749–1832) and Oken (1779–1851) placed Man at the top of this chain as its culminating achievement. But they were not evolutionists, adhering instead to a doctrine which saw different species as expressions of underlying archetypal forms. As Oldroyd (1980) points out, similarity between animals could 'be explained without difficulty by supposing . . . that both are separate manifestations or actualisations of the archetypal *Urtier* (animal-form) . . . . Thus can two utterly different approaches (i.e. Naturphilosophie and evolution) produce explanations of the same phenomenon' (p. 51). Identifying extraordinary similarities between species did not then lead automatically to an evolutionary theory. Versions of Naturphilosophie remained powerful until Darwin's time, in for example the work of the leading palaeontologist Richard Owen (1804–1892) (Desmond, 1982).

The most famous pre-Darwinian evolutionist is Lamarck (1744–1829). There are actually two 'Lamarckian' models of evolution; what he really said and what he is generally assumed to have said, the latter being more influential (Hull, 1982). The view commonly ascribed to him is usually summed up in the phrase 'inheritance of acquired characteristics'. Physical features acquired by parents in the course of striving to adapt to their environment are held to be passed on to their offspring. This implies that evolution is an active, creative, process and that Man has reached his present pinnacle by his own efforts across the generations.

His real view was subtly different from this and might be called an 'escalator' model; there is a fixed hierarchy of forms of increasing complexity up which organic matter ascends, certainly by its own efforts but in a more prestructured way than simple 'inheritance of acquired characteristics' implies. Each species represents a rung on the ladder, a form through which we passed in our evolution. Lamarck's younger contemporary Cuvier (1769–1832) upset this hierarchy (and the Great Chain of Being) by introducing a fourfold classification of animal life into separate 'kingdoms' each with its own hierarchy of complexity: vertebrata, mollusca, arthropoda and 'radiata'. After Lamarck's death his views fell rapidly into disregard under attack from Cuvier, who opposed evolutionary theories and espoused a form of creationism. Darwin's grandfather, Erasmus Darwin, had also proposed an evolutionary account, in verse, at the turn of the century which Darlington (1959) compares favourably with Lamarck's.

Throughout the early nineteenth century a number of works appeared discussing the nature of inheritance and countenancing the possibility of evolution, often with Man included. In some instances (Lawrence, 1819; Chambers, 1844) wrath descended upon the author's head in consequence. In other cases (Combe, 1828; Latham, 1850) more circumspect presentation kept them safe. Powerful scientific evidence was emerging from embryology, led by the work of the Estonian physiologist Baer (1792–1876) (Baer, 1828). This seemed to show the foetus passing through a number of stages in which its form resembled that of creatures 'lower' in the hierarchy of animal life; fish, reptile, amphibian and mammalian phases followed one another in the ontogenesis of the human foetus. Such evidence powerfully influenced Chambers and, more especially, a new generation of German physiologists. The leading figure among these was Ernst Haeckel (1834–1919), who saw in this embryological data proof of a 'biogenetic law' that 'ontogeny reflects phylogeny'. This 'recapitulationist' model proved to be seriously misleading, but for a while in the latter nineteenth century acquired the status of orthodoxy. Later in the book we will see that recapitulation remains a live issue. Following the publication in 1859 of Darwin's *Origin of Species* Haeckel published his *Generelle Physiologie* (Haeckel, 1866) and *History of Creation* (Haeckel, 1868) wholeheartedly supporting him. In Haeckel we see the Naturphilosophie tradition becoming evolutionary.

But serious psychological blocks to the acceptance of evolution persisted, both in general and as applied to humans. Firstly there was a pervasive reluctance to challenge orthodox religion except as a last resort. Privately extreme fundamentalist accounts of Creation may have been rejected by the educated, but there was a broader Christian view of science as 'Natural Theology' (expounded by Paley, 1802) which had sustained a truce between science and religion from the late eighteenth century to

the mid-nineteenth. Respect for this inhibited writers in challenging the basic assumption that God designed and created all living forms in a single brilliant exercise in divine engineering. Secondly, as we will see, there is the time-perspective problem. Though being steadily eroded by geologists, myopic bias persisted and estimates of the time since life's origin were by and large inadequate down to the end of the nineteenth century and beyond. Darwin's friend and, later, rather lukewarm supporter Sir Charles Lyell (1797–1875) was the geologist most influential in extending the time-scale sufficiently for evolution by natural selection to be viable (Lyell, 1863).

Thirdly, what was a 'species'? A typical passage:

> Providence has distributed the animated world into a number of distinct species, and has ordained that each shall multiply according to its kind, and propagate the stock to perpetuity, none of them ever transgressing their own limits, or approximating in any great degree to others, or ever in any case passing into each other. Such a confusion is contrary to the established order of Nature. (Prichard, 1813, p. 7)

Such a picture permitted no possibility of species transformation or division. Furthermore, even as late as 1850, Latham puts forward a grossly oversimplified model of each species descending from 'a single protoplast pair'. Although 'multiple protoplast' origins might be possible this is very confused. It was this idea that animals could be classified into absolutely different, non-interacting species slots that Darwin's notion of continual variation was to so profoundly challenge. To see species as clusterings in a continuum of variation required a major psychological change, and one which even since Darwin has not been fully understood.

Fourthly, there is the notion of hierarchy itself, the assumption that life is organised like a pyramid with Mankind at the top, that it has a moral dimension of excellence opposed to inferiority. Although this was not entirely relinquished until the present century, if at all, one of the merits of Darwin's model was that in principle it was devoid of value judgments regarding the merits of different species. No niche was any better or worse than any other, form was determined by the survival requirements of the niche occupied. This even applied to humans, though most writers on human evolution could not swallow equality until the present century, depicting the races as hierarchically arranged with white Europeans highest and Australian aborigines, 'Hottentots' and Fuegians at the bottom. Even so, the age-old projection of moral values on to the entire animal realm had to be forsaken if a scientific account of evolution was to emerge, and as far as non-humans were concerned it attenuated rapidly after 1859.

The blocks to accepting evolution were not all psychological. The fossil record was far from unambiguous and it is worth noting that T. H.

Huxley considered the major evolutionary steps to have occurred *prior* to the start of the fossil record, since when persistance, rather than transformation, had been dominant (see Desmond (1982) for the complexities of this issue, and Irvine (1955) for more background).

Technically, the topic awaited identification of a scientifically acceptable mechanism by which evolution could be explained without invoking metaphysical principles of striving 'life-forces' and the like. It was here that the Darwin–Wallace model triumphed. Its assumptions are three-fold: (a) that population has a tendency to outstrip food-supply (as shown by Malthus 1803); (b) that there is a continuous range of spontaneous variations among offspring in their physical attributes; (c) that offspring nevertheless tend to resemble their parents. The details of how inheritance operated were as yet obscure, and when further examined the picture changed seriously (see section B, below). Taking these three assumptions in conjunction the theory of evolution as occurring by 'Natural Selection' from spontaneous variants could be persuasively advocated. A. R. Wallace (1823–1913) remained far more single-mindedly devoted to the principle of Natural Selection subsequently than did Darwin. The principle ensured that those variants best fitted to survive in their environment would reproduce more successfully, leading over the aeons of geological time to the appearance of new species and the extinction of old ones. The phrase 'survival of the fittest', coined by Darwin's contemporary evolutionist Herbert Spencer (1820–1903), is actually rather deceptive (although Darwin eagerly adopted it). As it stands it is tautologous, the fittest being by definition those who survive. Unfortunately it smuggled the moral dimension back into the debate, for 'fittest' was also understood to be 'healthiest', health meant hygiene, and cleanliness of course was next to godliness. Spencer's usage prepared the way for what is known as 'Social Darwinism' (see section B below). Even the word 'evolution' was Spencer's rather than Darwin's – who preferred the more neutral 'transformation'. Tennyson's line 'Nature red in tooth and claw' was also felt to enshrine Darwin's viewpoint. This too was a misrepresentation, concentrating on only one of an almost infinite variety of ways in which life conducted its 'struggle'. In fact face-to-face physical conflict is relatively rare as later ethologists discovered, and its intention is not often to slaughter the opponent. Within species it serves to establish dominance hierarchies and accessibility to mates while between species it is clearly not the predator's aim to exterminate its prey, predator and prey are *not* in competition, indeed elimination of prey means elimination of predator. Later in the century the Russian, Prince Kropotkin, found such a dearth of evidence for struggle, and so much for co-operation, on his Siberian expedition that he wrote a book entitled *Mutual Aid* (Kropotkin, 1939 [1902]) promoting an idealistic anarchism quite opposed to the pro-competition ideology of social Darwinists.

What should be noted is that such phrases as 'survival of the fittest' represent the immediate response of Darwin's contemporaries to his theory. It was being socially reconstrued right from the start in the light of contemporary economic doctrines and psychological assumptions. Such expressions do not accurately reflect the scientific core of the theory, but neither, it must be admitted, did Darwin devote much energy to combating them, nor was he immune from similar interpretations. The fact that the theory could be used to provide a rationale for the economic and political *status quo* was undoubtedly a factor in its final acceptance, just as hitherto the belief that evolutionary theories would undermine the moral basis of civilisation had been a factor in their suppression.

2 *Evolution and Man*

In the 1st edition of *The Origin of Species* Darwin barely mentions human evolution, and then only on the penultimate page in one of science's great throwaway lines:

> In the future I see open fields for far more important researches. Psychology will be securely based on the foundation already well laid by Mr. Herbert Spencer, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history. (Darwin, 1859)

This was disingenuous of him. 'Man's Place in Nature' (as T. H. Huxley called his 1863 Essays) had been a perennial riddle. Even within Christianity doctrines varied; some saw us as the privileged focus of Creation for whose benefit the whole natural world was made, others saw Man as the locus of sin and wretchedness in an otherwise perfect and immutable cosmos (Kidd, 1833; Chapman, 1837 respectively). German Naturphilosophie put us at the pinnacle of Creation. Oldroyd (1980) quotes Oken; 'Man is the summit, the crown of nature's development, and must comprehend everything that has preceded him, even as the fruit includes within itself all the earlier developed parts of the plant. In a word, Man must represent the whole world in miniature' (Oken, 1847, p. 2). This is a restatement of a position going back to the Hermetic philosophers of the Renaissance (Yates, 1964). Such accounts are resolutely anthropocentric and in 1986 I rather sourly see in them a sort of collective macho narcissism masquerading as a moral imperative, but that's by the by.

The possibility of including Man in the natural scheme of things, of treating us for scientific purposes anyway as an animal species, aroused extraordinary squeamishness. Linnaeus had courageously classified *Homo sapiens* (his term) in the *Anthropoidea* along with some other primates, although his knowledge of these was poor. Cuvier rejected this, drawing

a spurious distinction between 'quadramanous' (four-handed) and 'bimanous' (two-handed) anthropoidea, the latter including only Man. Although by the mid-nineteenth century this had been reversed by comparative anatomists, other candidates for 'anatomically unique feature' were proposed, Richard Owen stuck out for the part of the brain known as the hippocampus minor, to be roundly trounced by T. H. Huxley. The acceptability of treating humans as animals was a problem throughout this early period. Both Lawrence (1819) and Chambers (1844) had been vilified for proposing that the zoological study of man as animal was the only proper foundation for research. The famed Swiss physiognomist Lavater (1741–1801), whose position was a pious, popular, version of Naturphilosophie had written in his Essays (1781–1787):

> It is well known, that of all animals, the monkey approaches nearest to the human form; yet what distance between monkey and man! – But the more enormous this distance is, the more is man bound to rejoice at it. Let him carefully guard against that false humility which would degrade his being, by an exaggeration of the relation which it bears to a creature so much his inferior!
>
> Can anyone find in the monkey, the majesty which sits enthroned on the human forehead, when the hair is turned backward? Is it not a profanation of the word hair, to apply it to the mane of the monkey? (Lavater, 1797, pp. 122, 123)

Wendt (1972) quotes a similar, but madly rabid, passage from Oken. Latham (Latham, 1851) is still acutely aware of the difficulties in making the comparison palatable:

> Unless the subject be handled with excessive delicacy, there is something revolting to fastidious minds in the cool contemplations of the *differentiae* of the Zoologist 'Who shows a Newton as he shows an ape'. Yet, provided there be no morbid gloating over the more dishonourable points of similarity, no pleasurable excitement derived from the lowering of our nature, the study is *not* ignoble. (p. 6)

Nevertheless the combined evidence of comparative anatomy and embryology was forcing the ape-human resemblance into the open. It had been a point of interest ever since Tyson (1699) had compared what he thought was a 'Pygmie' (in fact a chimpanzee) with a Monkey, an Ape and a Man. Unfortunately western thought had always seen apes and monkeys as symbols of moral degeneracy, epitomes of lust, mischievousness and even devilishness. They were essentially wicked species. Perhaps this was no coincidence, it was the sheer force of the *resemblance* which now rendered so intense the anxiety raised by this new prospect of some form of actual *identity* between us and apes. Clearcut physical differences proving

increasingly elusive the orthodox case began to rest ever more precariously on moral and spiritual distinctions.

In the wake of *The Origin of Species* T. H. Huxley began extrapolating the implications of the theory of evolution for humans, reviewing the issue in a series of three essays published in January 1863, collectively entitled *Man's Place in Nature*. He derides the contemporary reluctance to face facts for fear of moral consequences. The difference from Latham's tone is dramatic; 'it is not I who seek to base Man's dignity upon his great toe, or insinuate that we are lost if an Ape has a hippocampus minor' (Huxley, 1901, p. 152).

Another issue facing those concerned with the physical status of Man was the long-running controversy over *monogenism* versus *polygenism*.[3] Was the human race a single species? Christians were implicitly committed to monogenism since we are all descended from Noah's sons, but anthropological studies from Blumenbach at the turn of the century onwards had shown humanity's amazing physical diversity (Blumenbach, 1865). Combine this with a belief in species immutability, or a short time-span since Creation, or both, and such diversity becomes nearly inexplicable in a monogenist framework. Darwin's theory resolved this but not in an entirely unambiguous fashion. By adopting Lyell's time-scales the old time-perspective is rendered obsolete, while the entire theory is aimed at proving immutability mistaken. But the resulting monogenism was now placed on such an extended time-scale that racial divergences could be placed far enough back for the polygenist spirit to win out in practice, if not in theory. For the remainder of the century, and into this, books on human evolution regularly presented readers with speculative family trees of the human race which left no doubt as to the gulf between European and 'Negro'.

By the 1860s then, it was finally possible for scientists to treat humans as members of the animal kingdom, subject to the same kinds of physio-

[3] The Monogenism versus Polygenism issue continued to preoccupy anthropologists for the remainder of the century, though the connotations of the two positions can become somewhat convoluted: Topinard for example (1877, rep. 1890), proposes a version of polygenism as being the most consistent with 'transformationism' (i.e. evolutionary theory) and considers monogenism in its classic form as outdated Christian dogma. The notion that present human 'races' evolved directly from the primate species native to their present homelands has not yet entirely died out; its most widely read twentieth-century exponent was probably F. G. Crookshank, whose extraordinary *The Mongol in Our Midst* went through three editions between 1924 and 1931, while an even more bizarre version appeared in 1973; Oscar Kiss Maeth's *The Beginning was the End*. (Both of these use the technique of publishing alongside one another photographs of a supposedly 'typical' human inhabitant of the region and an indigenous primate, to display their 'similarity'. Judiciously used such a technique could probably prove us to have descended from parrots! The admittedly curious resemblances which can occur between animal and human physiognomies have inspired a discernible genre of publications from Della Porta (1623) onwards, to which Lavater in part belongs.) The genuine element in the controversy at present seems to be the nature of the shift from *H.erectus* to *H.sapiens*, discussed in Chapter 6, but this is far removed from nineteenth-century polygenism, however interpreted.